



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,926	12/16/2003	Masatoshi Shiraiishi	OMY-0034	4251
23353	7590	09/02/2008		EXAMINER
RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036			CHACKO DAVIS, DABORAH	
			ART UNIT	PAPER NUMBER
			1795	
MAIL DATE	DELIVERY MODE			
09/02/2008	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/735,926	Applicant(s) SHIRAISHI ET AL.
	Examiner DABORAH CHACKO DAVIS	Art Unit 1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 July 2008.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 31-38 is/are pending in the application.
- 4a) Of the above claim(s) 35-38 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 31-34 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/DP/0656)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group IV, claims 31-34, in the reply filed on July 16, 2008 is acknowledged. Claims 35-38, are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 31-34, are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U. S. Patent No. 5,626,913 (Tomoeda et al., hereinafter referred to as Tomoeda).

Tomoeda, in col 5, lines 65-67, in col 6, lines 1-8, and lines 28-62, in col 7, lines 1-8, in col 8, lines 47-67, discloses a wafer processing system (substrate processing apparatus) that includes resist coating units (resist film forming means) that coat a resist on the surface of a wafer (form a resist film), and a controller (mass-flow controller and a flowmeter) that controls the supply amount (distribution of a dissolving characteristic of the resist) of the developing solution introduced onto the surface of the resist film on

the wafer so as to develop the resist film (the resist film material has an affinity against the developer i.e., it is dissolvable) avoiding development non-uniformity (i.e., developing the resist in a direction of a thickness of the resist film, or non-uniformly distributing the developer such that thicker portions of the resist layer receives more developer and viceversa), wherein the developing solution is controlled via the mass-flow controller prior to developing the substrate (substrate coated with the resist) (claims 31, 32, and 34). Tomoeda, in col 15, lines 50-55, and in col 16, lines 9-14, discloses that the photoresist coated substrate is heated prior to exposing and/or developing processes, and such heating that is pre-heating and post-heating will inherently change resist film distribution on the surface of the substrate (due to reflow of photoresist film upon heating) (claim 33)

Tomoeda teaches a developing unit that is controlled by a mass-flow controller and a flowmeter. In the event any differences can be shown for the developing unit that controls the developing solution in a direction of a thickness of the resist film, as opposed to the mass-flow controlled developing unit taught by Tomoeda, such differences would have been obvious to one of ordinary skill in the art because Tomoeda, in col 7, lines 1-8, in col 8, lines 13-15, lines 16-31, in col 9, lines 1-13, teaches that the developing solution supply is controlled in a manner that the i) developing solution supply is gradually increased thereby gradually increasing the concentration of the developing solution, ii) the developing solution supplied spreads more smoothly on the resist film, and iii) that the development process is so performed to avoid any development non-uniformity caused by the resist residual (scum of the

resist) dissolved in the developing solution realizing uniform development i.e., the development of the resist is in the direction of the thickness of the resist film.

Tomoeda, in col 16, lines 9-16, discloses that the heating unit performs a baking process on the photoresist layer i.e., the heating is performed on its top surface area and will inherently create in the resist layer, a top cured hardened portion constituting the first layer, and a less heated bottom portion of the resist layer forming a less cured (i.e., more moisture portion of the resist layer, more dissolvable layer) constituting a less cured resist layer portion sandwiched between top hard cured hardened portion and the substrate beneath and positioned on the rear side of the top hard cured hardened portion, and thus easily dissolvable to the developer solution.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

Art Unit: 1795

more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

/Daborah Chacko-Davis/
Examiner, Art Unit 1795

August 29, 2008.